Doctor of Science in
*Health Science*
*Human and Sport Performance*

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**Curriculum**

The vision of Rocky Mountain University of Health Professions (RMUoHP) is to become widely recognized for excellence in healthcare education. The Doctor of Science (DSc) in Health Science with clinical concentration areas in Athletic Training, Clinical Electrophysiology, Health Promotion and Wellness, and Human and Sport Performance develops evidence-based clinician-scientists with advanced clinical skills who can critically evaluate the literature and participate in the research process through identification of best practice in the concentration area and apply that to independent clinical research.

The core and concentration courses are designed to enhance clinical, research, teaching, and leadership skills. The program is designed for practitioners and educators to continue professional work obligations during the program while attending eight to ten semesters of didactic work followed by completion of a dissertation. The dissertation will emphasize the application of scientific principles related to the application of evaluation, intervention and research of clinical problems seen in healthcare.

The purpose of the DSc in Health Science program is to prepare professionals from healthcare related fields as master clinicians, researchers, leaders, and educators. The program provides students with the ability to make contributions by publishing in peer-reviewed journals and/or presenting research at professional conferences. Students planning to enter an academic career will learn skills for effective teaching in academic healthcare programs.

**Degree Objectives**
The DSc in Health Science Program is committed to the development of the healthcare professional who can:

- Conduct and disseminate clinically sound, ethical, cost-effective research;
- Make significant and relevant contributions to the current body of scientific knowledge in the discipline;
- Develop knowledge expertise in the area of dissertation interest;

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Content and dates are subject to change.
• Influence ethical and legal management of healthcare through education of providers, consumers, and society at large;
• Enhance leadership abilities, including competence in the roles of clinician, researcher, educator, and leader;
• Describe and distinguish the various theories associated with the concentration area.

**Curriculum**

**Core Courses:** All students are required to complete research methods/biostatistics courses as well as required theory courses. These courses provide the foundation for the concentration courses and the research process.

**Concentration Courses:** Students are required to select a concentration area before enrolling in the DSc program. Concentration courses are generally in the specific area of the research that the student will pursue.

**Concentrations:**

- Athletic Training
- Clinical Electrophysiology
- Health Promotion & Wellness
- Human & Sport Performance

**Admission Requirements**

1. A Master's degree from an accredited college or university.
2. Have a grade point average of 3.4 (on a 4.0 scale) on all work completed during the Master's degree.
3. Possess writing and oral communication skills sufficient to conduct and deliver the results of meaningful research. Must submit an essay that includes current personal, intellectual and professional interests and why the student is applying to the degree program.
4. Submit a current Curriculum Vita.
5. Possess information technology skills sufficient to effectively participate in RMUoHP’s DSc program.
6. Possess information technology skills sufficient to effectively conduct research.
7. Have successfully completed, with a grade of B- or better, at least one course in Research Methods or Statistics at the Master’s or higher level.

**Concentration – Human and Sport Performance**

The Human and Sport Performance concentration includes a multidisciplinary focus with courses designed to increase the student’s competency and knowledge base in the various disciplines of exercise science, injury prevention, health, and sport or occupational performance. The core courses and directed independent study courses are designed to expand scientific inquiry and outcomes assessment, enhance research and consultation skills, and improve teaching and administrative skills.

The post-professional program in the science of human and sport performance offers expanded study in the advanced skills of applied sport science, human performance
evaluation, strength and conditioning methods, training program design for various populations, the use of advanced coaching theories and strategies, advanced nutrition, and the development and use of technology in various areas of sport and occupational performance.

The program is designed for practitioners to continue professional work obligations while completing eight semesters, each consisting of three modules of coursework. Modules 1 and 3 may include readings and assignments, as well as WebStudy participation (i.e. threaded discussions or chats). Module 2 in semesters 1, 3, 5-8 requires attendance on-site for lecture, demonstration and lab. For all courses, students complete coursework throughout the entire semester. A written qualifying examination, a practical comprehensive examination, and dissertation are expected in the second and third years.

The Human and Sport Performance Program, consisting of a minimum of 65 credits, is committed to the development of the specialist who can:

- Integrate current best practices into the evaluation of performance in sports and occupations;
- Modify practice strategies to optimize changing practice environments;
- Provide expert, effective and compassionate evaluation for individuals at risk for injuries;
- Effectively educate patients/clients, families, students, other healthcare professionals and the general public;
- Effectively interact with other members of the healthcare system and/or performance team to support human performance enhancement;
- Review, use and critique research literature;
- Conduct methodologically sound clinical and applied research;
- Impact the future to enhance and ensure quality human performance intervention strategies.

**Human and Sport Performance Mission**

The mission of the Human and Sport Performance DSc program is to prepare professionals to become evidence-based practitioners, learner-centered instructors, independent researchers, and leaders in the field of human performance enhancement.
## Program Module Calendar

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<tr>
<th>Semester 1 Sum 2015</th>
<th>Start Date</th>
<th>On-site Dates</th>
<th>End Date</th>
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<tr>
<td>Sum 2015</td>
<td>May 4, 2015</td>
<td>May 28-June 1, 2015</td>
<td>August 21, 2015</td>
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<tr>
<td>Semester 2 Fall 2015</td>
<td>August 31, 2015</td>
<td>ONLINE</td>
<td>December 18, 2015</td>
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<td>Semester 4 Sum 2016</td>
<td>May 2, 2016</td>
<td>ONLINE</td>
<td>August 19, 2016</td>
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<td>Semester 5 Fall 2016</td>
<td>August 29, 2016</td>
<td>October 4-9, 2016</td>
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<td>Semester 6 Win 2017</td>
<td>January 9, 2017</td>
<td>February 12-14, 2017</td>
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<td>Semester 8 Fall 2017</td>
<td>September 5, 2017</td>
<td>November 6-8, 2017</td>
<td>December 22, 2017</td>
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<td>Semester 9 Winter 2018</td>
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<td>CC 833A</td>
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<td>Semester 10 Summer 2018</td>
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<td>CC 833B</td>
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<tr>
<td>Residency</td>
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<td>Eight-year deadline from start of program is May 4, 2023</td>
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Student must register for Residency Credit (CC 877A, CC 877B, etc.) each semester until dissertation is completed & minimum credit requirement for program is attained.
Semester 1
(7 credits)

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HS 710 Evidence-based Practice (3 credits; 2 days On-site)
This course is designed to prepare healthcare professionals with the knowledge, skills and abilities necessary to make independent judgments about the validity of clinical research and to implement evidence-based clinical practice in their careers. This course will focus on the concepts of evidence-based practice with emphasis on forming answerable clinical questions and effective literature search strategies. The evaluative approach to appraising the research literature will prepare the students to judge the evidence on: 1) the accuracy and validity of diagnostic tests and the application of important diagnostic tests in the care of a specific patient; 2) the effectiveness of clinical interventions; 3) the natural history of health-related conditions; 4) risk of harm from select preventative and therapeutic interventions. Based on presentation of case scenarios, students will be required to formulate the key question(s), rapidly search medical and health-related databases, appraise the evidence with a critical analysis and describe application of the evidence in a clinical context. Instructor: Patrick McKeon, PhD, ATC, CSCS; Jennifer McKeon, PhD, ATC, CSCS

HS 712 Introduction to Research Methods: A Quantitative Approach (3 credits; 2 days On-site)
This course provides an introduction to general research principles and research ethics. The student will be introduced to the following topics in the research process: question formulation, principles of measurement, basic design and methodological features, issues of reliability and validity, and fundamentals of conducting a literature review. A quantitative article critique will be conducted in class and outside of class. The class format will include lecture, small group discussion, and practice. Instructor: Shane Koppenhaver, PT, PhD, OCS, FAAOMPT

HS 714 Scientific/Professional Writing (1 credit; Online)
This pass/fail course reviews PubMed, Index Medicus, other search methodologies, American Medical Association Manual of Style editorial format, the composition of a scientific/professional manuscript, and the style of Scientific/professional writing, its construction and formats. Instructor: Lori Thein Brody, PhD, PT, SCS, ATC

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Semester 2  
(5 credits)

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HS 760  Technology and Informatics  
(2 credits; Online)
This course is designed for the advanced clinician to explore major existing and emerging technologies and their potential impact on health care and health care education. Systems are addressed that support patient centered, safe, effective, timely, efficient and equitable care. An emphasis is placed on the role that information technology supports these systems and on development and use of technologies in 21st century healthcare/education. Current technology used for online/blended and face to face learning experiences will be analyzed and discussed. Instructor: Rodney Hicks, PhD, MPA., MSN, RN, FNP-BC, FAANP, FAAN; Jan Reese, MS

HP 702  Applied Sports Science  
(3 credits; Online)
This course reviews the various disciplines that play important roles in sports performance enhancement including biomechanics, motor learning, exercise physiology, and sport psychology. In addition, sociological aspects will be discussed regarding applications of science to different populations including athletes and tactical personnel. Applied projects will assist the student in taking foundational knowledge and applying it to real world sports scenarios to solve problems, enhance training, reduce injuries, or improve performance. Lecture, discussion, and presentation by student. Instructor: Brad Schoenfeld, PhD, CSCS, CSPS, FNSCA

Semester 3  
(6 credits)

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HS 720  Survey of Qualitative Research  
(3 credits; 2 days On-site)
This course introduces the student to qualitative research methods and their applications to problems and phenomena in healthcare. Emphasis is placed on the appropriate use and differences of qualitative methods, their philosophical underpinnings, and application to clinical issues. Instructor: Angela R. Merlo, PT, DPT, PhD

HS 722  Biostatistics 1  
(3 credits; 2 days On-site)
The purpose of this course is to introduce the student to biostatistics, the science of evaluating information in a biological setting. Such topics as simple descriptive statistics, basic probability concepts, probability distributions (normal & binomial), sampling distributions, and an introduction to t-distributions will be covered. Instructor: Tom Cappaert, PhD, ATC, CSCS

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Semester 4
(6 credits)

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**HS 732 Biostatistics 2**
(3 credits; Online)
The purpose of this course is to build upon the topics introduced in Biostatistics 1. This course will cover such topics as interval estimation, confidence intervals, hypothesis tests, and one and two-sample t-tests. *Prerequisite: HS 722.* Instructor: Tom Cappaert, PhD, ATC, CSCS

OR

**HS 734 Qualitative Research 2**
(3 credits; Online)
This course is the second in a two-course sequence on qualitative research methods that extends and elaborates on the topics covered in HS 720. Major approaches used in conducting qualitative research and the application of these methods to problems and phenomena in healthcare will be examined. The emphasis of the course is on the collection, management, analysis, and interpretation of qualitative data. Exploration and application of topics such as sampling, interviewing and observation techniques, data analysis methods, and reporting of qualitative research will be addressed. Evaluation and critique of research studies utilizing qualitative methods will also be examined. *Prerequisite: HS 720.* Instructor: Angela R. Merlo, PT, DPT, PhD

**HS 750 Leadership and Policy in Healthcare**
(3 credits; Online)
This course examines ways to synthesize theoretical leadership concepts with personal and professional values embedded in a clinical practice environment. Issues of power, innovation, working with teams, change and leadership/healthcare delivery models are addressed. Themes of self-reflection, self-mastery, and interpersonal skills are explored. Instructor: Matt Kutz, PhD, ATC

Semester 5
(9 credits)

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**HS 730 Epidemiologic Methods**
(3 credits; 1.5 days On-site)
This course will introduce the student to important epidemiological methodology/concepts commonly used in evidence-based practice/medicine. The course will focus on the common observational designs, and common measures of disease frequency, risk association, and validity of diagnostic tests. The use and construction of receiver operating curves will be discussed. The course will also include an introduction into logistic regression and survival analysis methods in how they apply.
to disease outcomes/disorders. Students will conduct and apply basic epidemiological concepts using statistical software, and learn how to design and develop. The student will be provided with information to aid in data collection and management. Prerequisite: HS 710. Instructor: Jason Brummitt, PT, PhD, ATC, CSCS

AT 631 Motor Control and Movement Analysis (3 credits; 2 days On-site)
Discussion and analysis of scientific principles related to the mechanical understanding of motor control and the human body in motion. Review of related literature and research in motor learning and control. The focus of this course will be on qualitative analysis of motor assessment as related to musculoskeletal assessment and physiotherapy interventions. Instructor: Kathryn B. Schwartzkopf-Phifer, DPT, OCS, CSCS; Mark Lehr, DPT, CSCS

HP 704 Methods and Programming in Strength and Conditioning (3 credits; 2 days On-site)
This course will expose students to advanced methods in various venues of strength and conditioning. Current research and practice are examined for advanced training strategies in use at different levels of competition. Students will examine different methods currently in use in the field and discussed in the literature on selected topics and demonstrate appropriate implementation of advanced training methods. Additionally, this course will refine the students’ ability to construct an advanced training program designed to enhance performance in specific ways. The student will demonstrate the ability to critically analyze and alter a training program. Instructor: Matthew Rhea, PhD, CSCS*D

Semester 6 (8 credits)

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<th>Course Code</th>
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<td>HP 610</td>
<td>Advanced Sport Performance Technology</td>
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<td>January 9, 2017</td>
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<td>April 28, 2017</td>
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<td>HS 740</td>
<td>Teaching and Learning Theory</td>
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teaching in didactic and clinical settings based upon the evidence-base of best teaching practices. Instructor: Malissa Martin, EdD, ATC

**HS 800 Proposal Writing** (2 credits; 1 day On-site)
The conduct of scientific inquiry requires careful planning and forethought to assure the eventual implementation of a study will successfully result in interpretable and meaningful measurements and that valid conclusions may be drawn. This course will provide students with the necessary background and experience to formulate a clearly delineated, hypothesis-driven research proposal that can be used to convince funding agencies and/or doctoral committees to support the study. In addition, this course will provide key information about the Institutional Review Board process so that the student will be able to assure a safe and ethical environment for their volunteer subjects. Instructor: Brent Alvar, PhD, CSCS*D, RSCC*D, FNSCA, FACSM

**Semester 7**
(8 credits)

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**HP 708 Advanced Coaching Theories and Practices** (3 credits; 1 day On-site)
Methods and tactics for improving performance through coaching continue to evolve. This course will examine the evolving literature and coaching practices combining theories from motor learning, sport psychology, occupational therapy, and sport coaching. Students will become more familiar with the foundational concepts underlying these theories and methods as well as review the literature supporting them. Instructor: Nick Winkleman, PhD-ABD, CSCS

**HP 710 Applications of Exercise Science in Tactical Fitness and Performance** (3 credits; 2 days On-site)
This course will introduce students to the various methods and strategies for improving performance in military, law enforcement, and fire department venues. Topics such as injury prevention and tactical job preparation will be discussed with students completing applied projects in selected tactical operations. Tactical fitness research and literature will serve as the content for developing professionals capable of supporting the tactical field with evidence-based practice. Instructor: Daniel Dodd, PhD, CSCS

**HS 752 Curriculum Development** (2 credits; Online)
This course examines various classical and modern curriculum theorists as they apply curriculum development. Emphasis is placed on congruence between institutional mission, philosophy, and goals; professional standards; and needs and expectations of a program’s communities of interest. Students design a curriculum to meet the needs of a stated role and setting. Instructor: Leamor Kahanov, EdD, ATC

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Semester 8
(4 credits)

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**HS 810  Dissertation Prep II**  (1 credit; 1 day On-site)
This course is a continuation of HS800 Dissertation Prep I where students will finalize their written prospectus. Students will continue securing dissertation committee commitments and be prepared to defend a mock prospectus defense via presentation while on campus. Students prepare for the Institutional Review Board process by completing the CITI Human Subjects Research course, becoming familiar with the online submission platform, and drafting informed consent documents. Instructors: Brent Alvar, PhD, CSCS*D, RSCC*D, FNSCA, FACSM

**HP 714  Recovery and Regeneration**  (3 credits; 1.5 day On-site)
This course will examine the science and history behind various advanced methods of recovery and regeneration techniques for the human body. The evidence will be reviewed in numerous topics including nutritional strategies, sleep habits, hydrotherapies, cryotherapy, sports supplementation, nutrient timing, and massage therapy. Through an evidence led approach, students will demonstrate the ability to evaluate and identify various types of fatigue, prescribe the appropriate regeneration modality, and periodize a recovery program based upon the principles learned in HP 704 (Methods and Programming in Strength and Conditioning). Instructor: Brandon Marcello, Ph.D., CSCS

**Dissertation Phase**
*(Eight-year deadline from start of program to complete degree)*
*(12-credit minimum)*

Each doctoral student will be required to complete a dissertation that is evidence-based and involves applied research of experimental, nonexperimental, or descriptive designs. Examples of dissertations include: small randomized control trials; single-case/subject designs, quasi-experimental designs, qualitative methods, survey research, epidemiological designs (cross-sectional, cohort or case-control) normative research, and correlational designs.

In 9th semester students will complete comprehensive exams

**CC 833A  Doctoral Dissertation 1 – Semester 9**  (6 credits)

**CC 833B  Doctoral Dissertation 2 – Semester 10**  (6 credits)

Semesters of Dissertation Residency Credit (CC 877A, CC 877B, etc.) as needed

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DSc-HSP Program Faculty

Brent Alvar, PhD, CSCS*D, RSCC*D, FNSCA, FACSM
Lori Thein Brody, PhD, PT, SCS, ATC
Jason Brummitt, PT, PhD, ATC, CSCS
Tom Cappaert, PhD, ATC, CSCS
Daniel Dodd, PhD, CSCS
Adam Feit, MS, CSCS
Rodney Hicks, PhD, MPA., MSN, RN, FNP-BC, FAANP, FAAN
Leamor Kahanov, EdD, ATC
Shane Koppenhaver, PT, PhD, OCS, FAAOMPT
Matt Kutz, PhD, ATC
Mark Lehr, DPT, CSCS
Brandon Marcello, Ph.D., CSCS
Malissa Martin, EdD, ATC
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Patrick McKeon, PhD, ATC, CSCS
Angela R. Merlo, PT, DPT, PhD
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